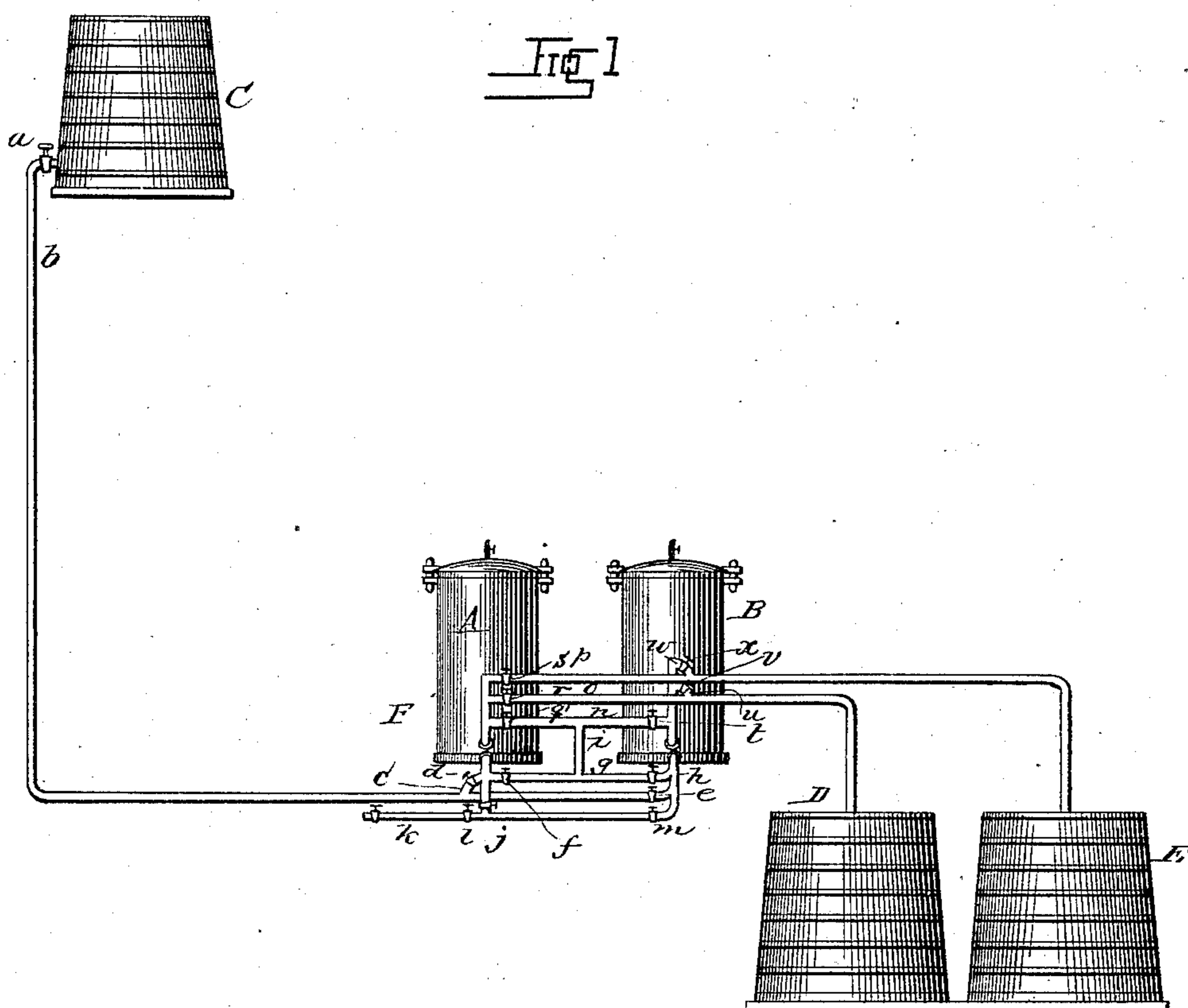


2 Sheets—Sheet 1.

# PROCESS OF AND APPARATUS FOR RECTIFYING SPIRITS.

No. 284,087.

Patented Aug. 28, 1883.



WITNESSES:

Med. Dr. Dietrich,  
Wm. Lecher

John H. Thierman  
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By-  
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ATTORNEYS.

(No Model.)

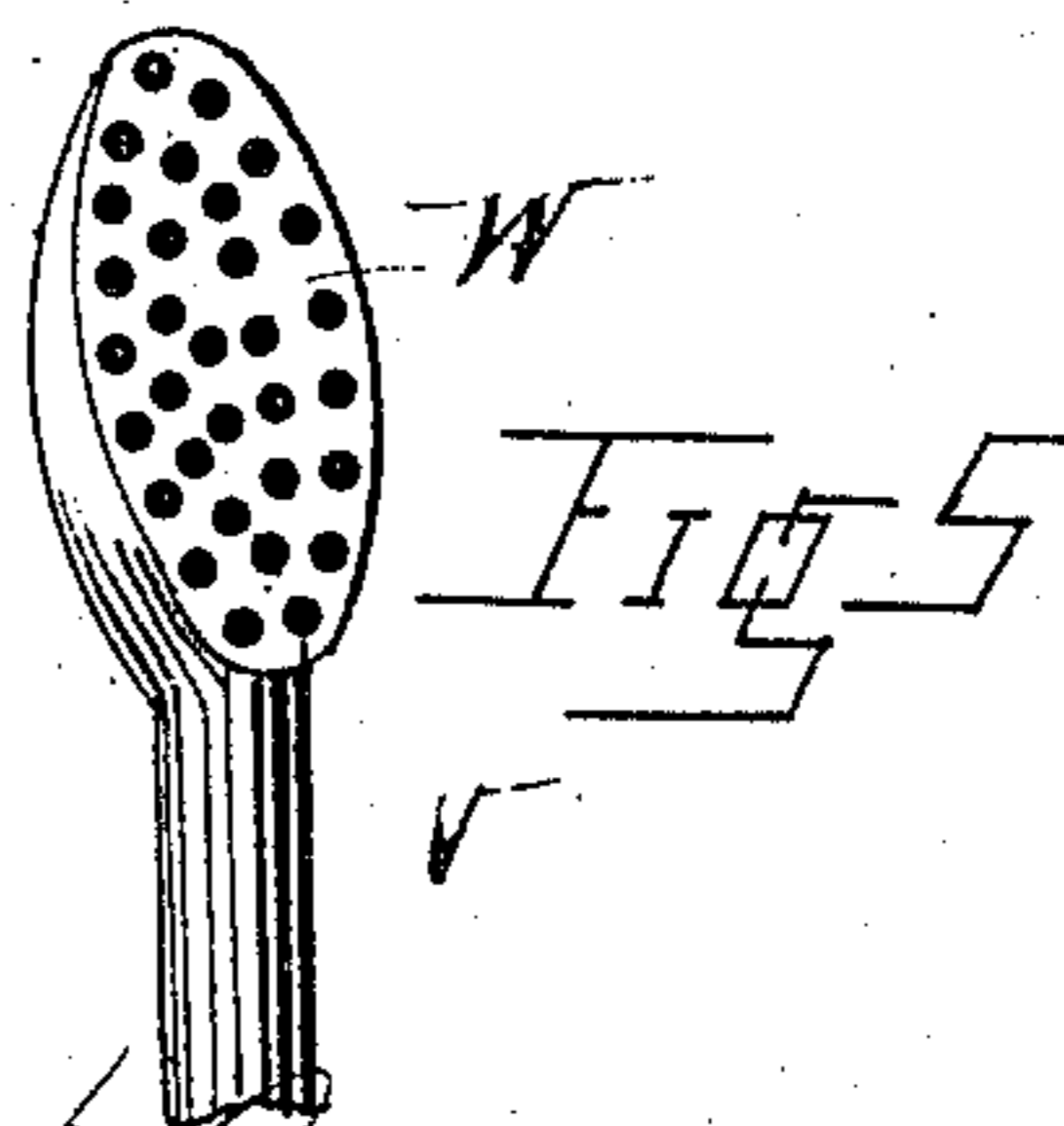
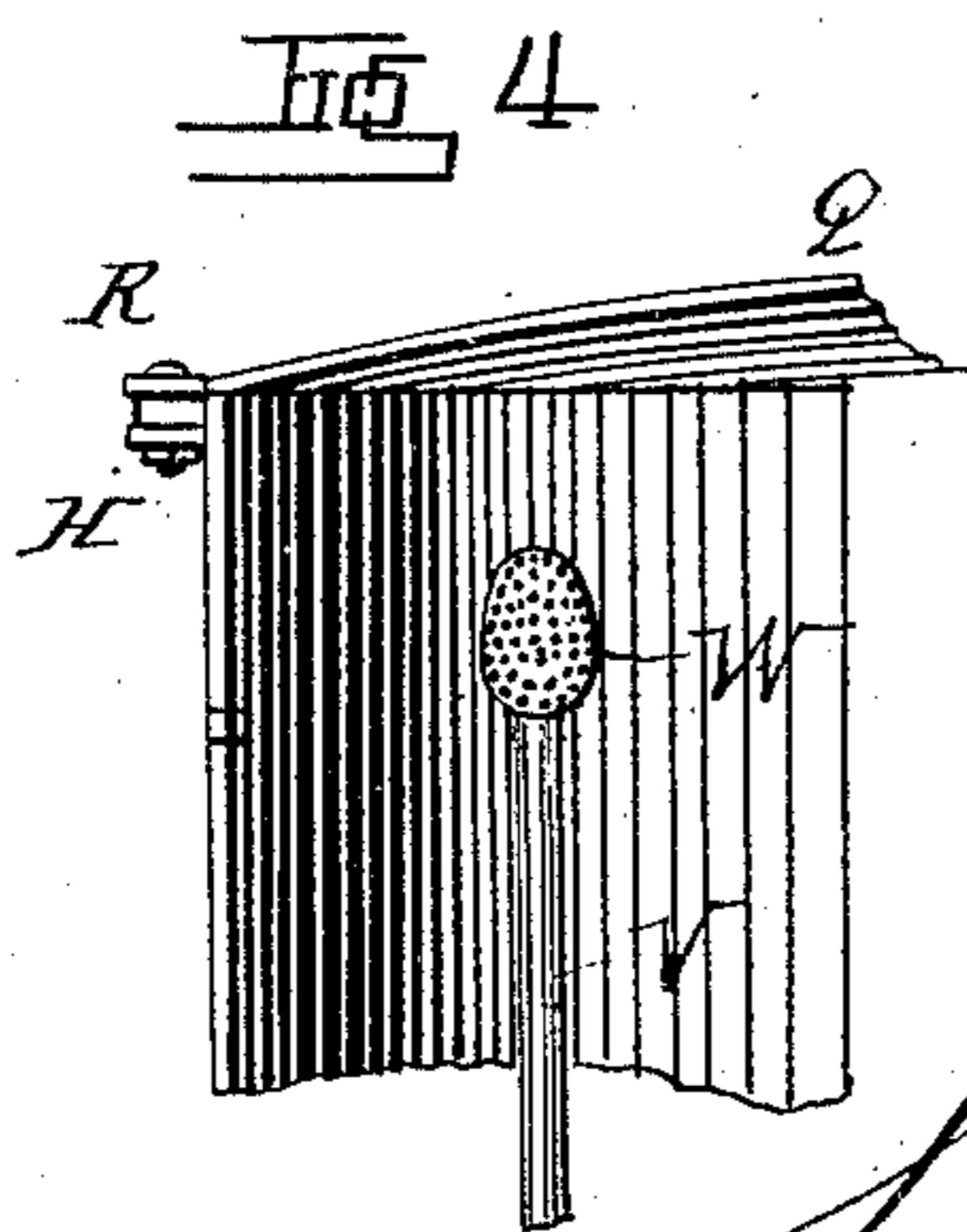
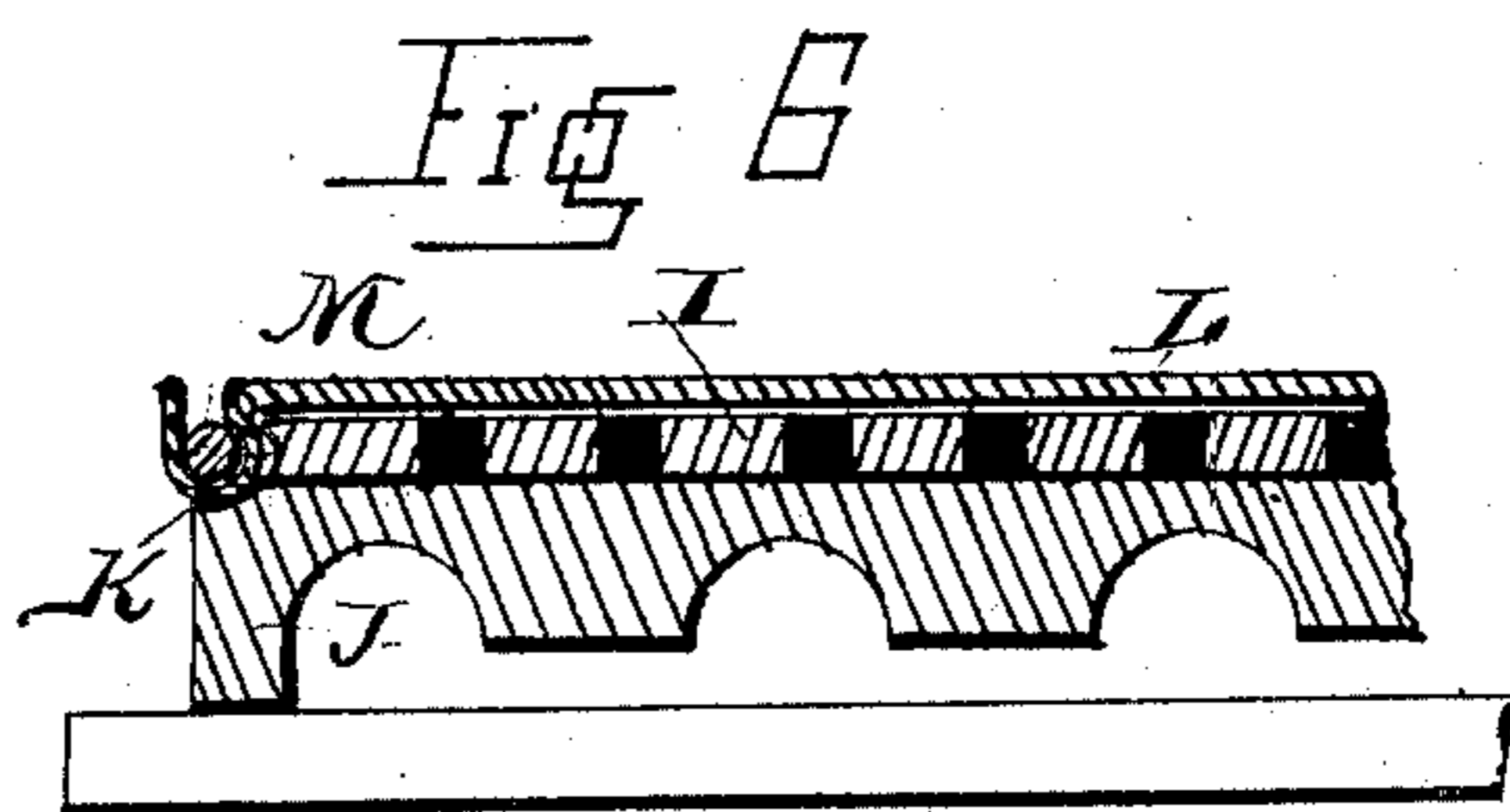
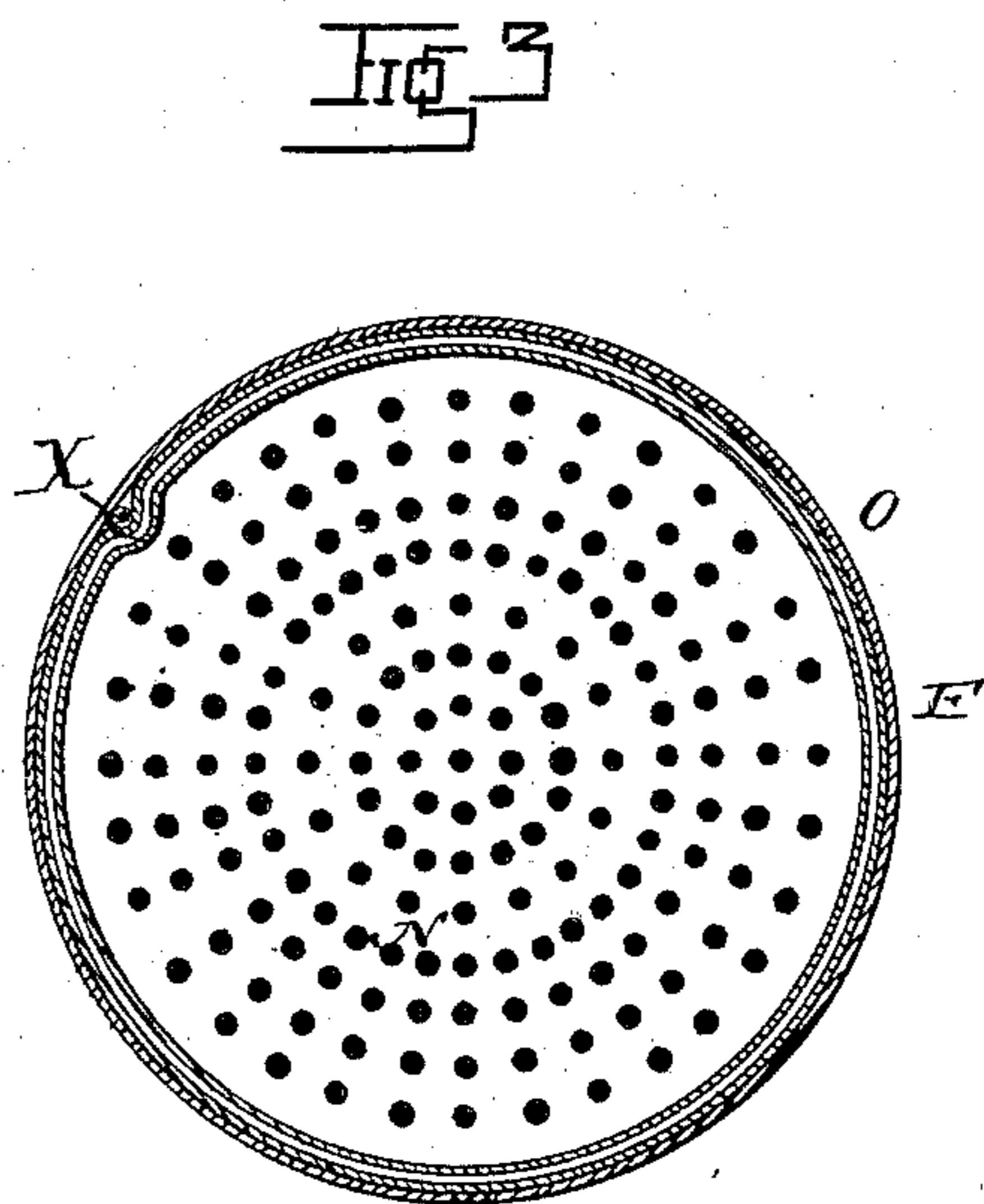
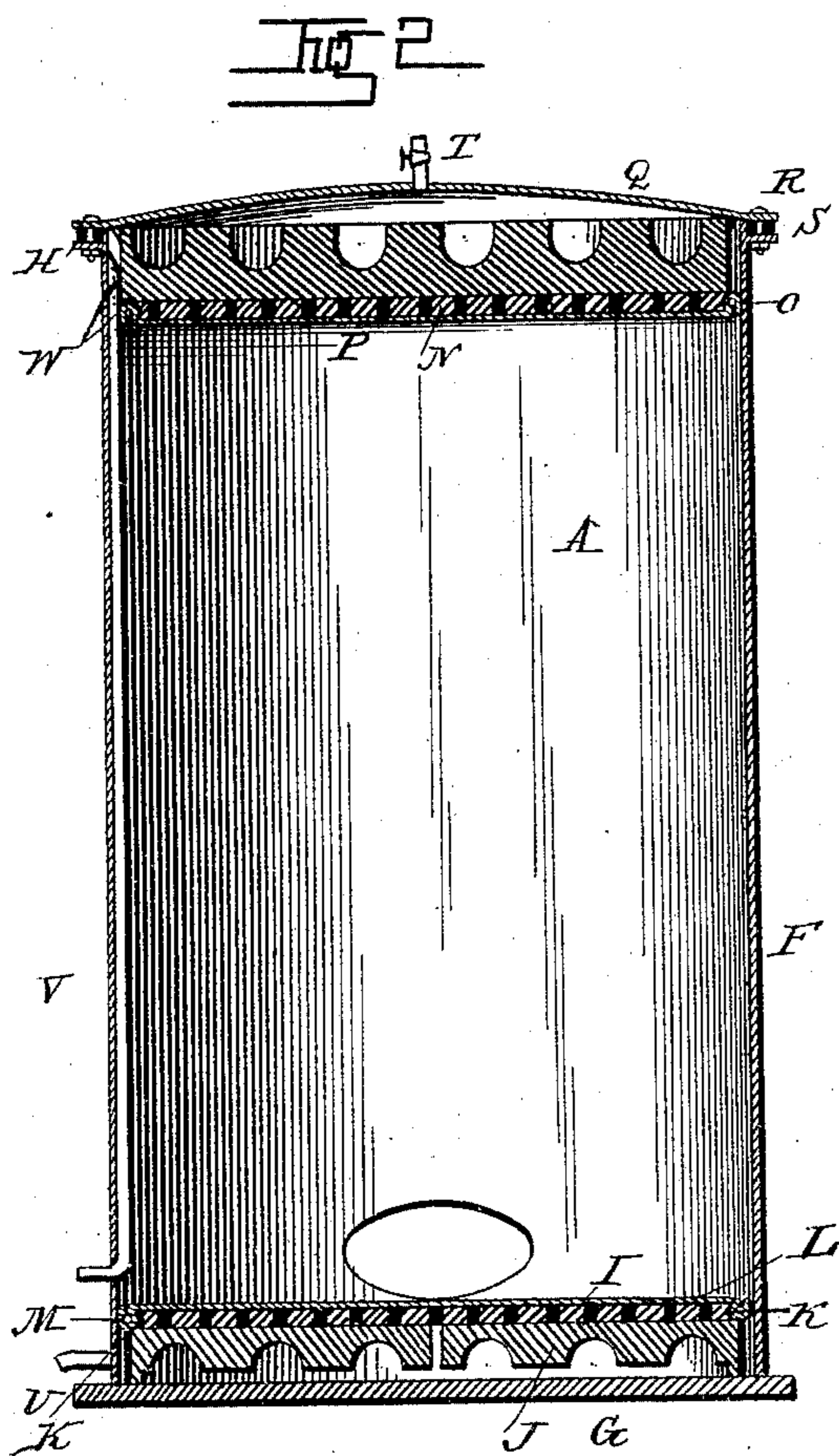
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J. H. THIERMAN.

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No. 284,087.

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WITNESSES:

*Ad. S. Dieterich*  
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*John H. Thierman*  
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# UNITED STATES PATENT OFFICE.

JOHN HENRY THIERMAN, OF LOUISVILLE, KENTUCKY.

## PROCESS OF AND APPARATUS FOR RECTIFYING SPIRITS.

SPECIFICATION forming part of Letters Patent No. 284,087, dated August 28, 1883.

Application filed June 29, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN HENRY THIERMAN, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Process and Apparatus for Rectifying Spirits; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of my entire rectifying apparatus. Fig. 2 is a vertical sectional view of one of the filtering-cylinders. Fig. 3 is a cross-section of the same. Fig. 4 is a broken-off detail view of the upper end of the outlet-pipe. Fig. 5 is a perspective of the upper end of the same detached; and Fig. 6 is a sectional detail view, on an enlarged scale, of the perforated false bottom.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to that class of apparatus for rectifying or filtering spirits in which the spirits are passed through a vessel filled with charcoal, having pipe and cock connections, which allow water to be passed through the spent charcoal, washing the remaining spirits out before removing the charcoal; and it consists, first, in the process of filtering and rectifying the spirits to an even degree by passing the same successively through two vessels, one containing half-spent charcoal, and alternately renewing said charcoal; and, secondly, in the improved construction and combination of parts of an apparatus, in which the washing of the charcoal is made easy, the filtering more perfect, and by which the spirits may be conducted to pass first through either of the two vessels, as hereinafter more fully described and claimed.

In the accompanying drawings, the letters A and B indicate the rectifying-cylinders. C is the reservoir containing the spirits to be rectified; D, the tank for receiving the dilute spirits, and E the tank for the reception of the rectified spirits. The rectifying-cylinders are both of the same construction, and consist of an outer cylindrical casing, F, preferably of

copper, having a rigid bottom, G, and a flange, H, at its upper edge. A perforated false bottom, I, having feet J raising it from the bottom, and an annular groove, K, around its edge, is placed upon the bottom of the cylinder, and a blanket, L, or a piece of similar thick woolen material, is stretched over the said bottom and held stretched over the same by means of a wire or similar band, M, pressing it into the groove, while the edges of the blanket extending beyond the wire are turned upward, forming a packing between the edges of the false bottom and the sides of the cylinder, which is done by allowing the edges to be turned up by the upper edge of the cylinder in inserting the covered false bottom. The lower end of the cylinder is provided with a man-hole, through which the spent charcoal may be removed, the central portion of the cylinder being filled with charcoal, which extends to the upper end of the cylinder, where the latter is provided with a false top, N, of the same construction as the false bottom, having an annular groove, O, and covered upon its under side with a blanket, P, fastened in the same manner as upon the bottom. This false bottom is held in place by a flanged cover, Q, which is fastened to the flange upon the upper edge of the cylinder by means of nutted bolts R, and which has a packing-ring, S, of rubber or other elastic material interposed between its outer rim and the flange upon the cylinder, making the cover fit tightly upon the same, and the cover is provided at its top with a vent-cock, T, through which the air in the cylinder may escape when the latter is filled. The cylinder has an inlet-pipe, U, entering it at the bottom, below the false bottom, and an outlet-pipe, V, which passes inside the cylinder along one side of the same, from above the false top, where it is enlarged, forming a flat oblique-faced perforated head or strainer, W, as seen in Figs. 4 and 5 of the drawings, until it passes out of the cylinder near the foot of the same, a short distance above the false bottom, and the edge of the false top has a half-round notch, X, which fits tightly around the pipe at the point where it passes it. A pipe, b, passes from the unrectified-spirit reservoir, which is preferably placed above the cylinders, and is provided with a stop-cock, a, and the

lower horizontal portion of pipe *b* has a branch pipe, *c*, provided with a stop-cock, *d*, which pipe opens into the inlet-pipe of the cylinder A. The lower horizontal portion of pipe *b* passes beyond the branch pipe *c*, and enters the inlet-pipe of cylinder B, where it is provided with a stop-cock, *e*, and the branch pipe *c* is continued upon the other side of the said cylinder, forming a connecting-pipe, *g*, running parallel with the horizontal portion of pipe *b*, and provided with a stop-cock, *h*, near the point where it opens into the inlet-pipe of the second cylinder, and having at its middle an upwardly-extending vertical pipe, *i*, which connects with the outlet-pipes, as later described. The lower end of the inlet-pipe of the first cylinder has a cock, *j*, and opens into a water-pipe, *k*, which runs parallel with the horizontal portion of pipe *b*, and has a cock, *l*, immediately before the point where it connects with the inlet-pipe, and is continued over to the inlet-pipe of the second cylinder, where it has a cock, *m*, at the point where it connects with the lower end of the said pipe. The ends of the outlet-pipes of the cylinders are bent upward, and three pipes, *n*, *o*, and *p*, extend horizontally from the side of the outlet-pipe of the first cylinder, one above the other, and have cocks *q*, *r*, and *s* at their junction with the same, the lower one, *n*, of which pipes extends to and connects with the outlet-pipe of the second cylinder, where it has a cock, *t*, and the vertical connecting-pipe *i*, extending from the upper one of the lower set of horizontal pipes, opens into the middle of the lower one of the upper set of horizontal pipes. The second, *o*, of the upper set of horizontal pipes extends with its downwardly-bent end into the diluted-spirit tank, and is connected with the outlet-pipe of the second cylinder through a branch pipe, *u*, having a stop-cock, *v*, and the upper one, *p*, of the same set of horizontal pipes extends into the tank for the reception of the rectified spirits, and is connected with the outlet-pipe of the second cylinder through a branch pipe, *w*, having a stop-cock, *x*.

To illustrate the operation of the apparatus I will start with the supposition that the charcoal in the second cylinder, or cylinder B, has just been renewed, and the charcoal in the cylinder A is half spent, and by considering all cocks not mentioned as open at the different steps of the process as being closed. Cock *a* on the conveying-pipe is now opened, admitting the spirits to flow down through cock *d*, which is opened into the inlet-pipe of the first cylinder, the vent-cock of which is opened until the spirits have ascended to its top, when it is closed. In this cylinder the spirits pass first through the blanketed false bottom, through the charcoal, and through the blanketed false top, which prevents particles of charcoal from passing out with the spirits through the enlarged strainer-head upon the upper end of the outlet-pipe, from whence it passes through the opened cock *q* into the horizontal pipe *g*, through the cock *h* upon

that pipe, into the inlet-pipe of the second cylinder, through that cylinder, out at the outlet-pipe, up through the upwardly-bent portion of the same into the horizontal portion of pipe *p*, through branch pipe *w* and cock *x*, by which pipe the spirits are carried to the tank for receiving the rectified liquor. When the charcoal now in the first cylinder is entirely spent, the flow of spirits is stopped by closing cock *a*; cock *l* upon the water-pipe is thereupon opened, and cock *j* upon the inlet-pipe, when the water will enter the cylinder passing through it, washing all the remaining traces of spirits with it from the charcoal, and passing out at the outlet-pipe, from which it enters the second of the upper set of horizontal pipes through its cock *r*, and passes through the said pipe into the tank or cistern for receiving the diluted spirits. The charcoal is now removed from the cylinder through the man-hole, and purified in any desired manner, whereupon the cylinder is filled with fresh charcoal and made ready for operation. It will now be seen that the first cylinder now contains fresh charcoal and the second cylinder half-spent coal, wherefore the spirits must be conducted a different course, first passing through the second cylinder, and thereupon through the first. To this end cock *a* is again opened, allowing the spirits to descend, this time passing the branch pipe *c*, the cock of which is closed, and entering the inlet-pipe of the second cylinder through cock *e*, which is opened. The spirits thereupon pass through the second cylinder, passing out through the outlet-pipe, through cock *t* into the lower pipe, *n*, of the upper set of horizontal pipes, through the vertical connecting-pipe into the upper pipe, *g*, of the lower set of horizontal pipes, the cock *f* of which is open, admitting the spirits to enter the first cylinder, through which they pass out at the upper portion of the upwardly-bent outlet-pipe, where it passes through the cock *s* into the pipe conveying the spirits to the tank for receiving the rectified spirits. When the charcoal in the second cylinder is entirely spent, the flow of spirits is stopped, water admitted into pipe *k* through cock *m* into the cylinder, passing through the same and through branch pipe *u* upon its outlet-pipe, the cock *v* of which branch pipe is opened into the pipe carrying the diluted spirits to their tank, when the process described is again repeated. It will thus be seen that one of the cylinders contains always fresh charcoal and the other half-spent coal, and that by passing the spirits first through the half-spent charcoal, and thereupon through the fresh coal, I obtain a more perfect filtration and rectification, the coarser impurities being detained in the half-spent coal, while the fresh coal will give the spirits the finishing filtration, the blanket forming the packing at the sides, and the strainer upon the outlet-pipe of the cylinder preventing any particles of the charcoal from passing out of the cylinder with the spirits.

I do not wish to claim, broadly, the process of passing spirits to be rectified through new and half-spent charcoal in the same process; but

5 What I claim, and desire to secure by Letters Patent of the United States, is—

1. The process of filtering and rectifying spirits, consisting in passing the spirits from their reservoir successively through two cylinders containing charcoal, alternately washing out and renewing said charcoal, and alternately conducting the spirits first through one cylinder, and thereupon through the other, conducting them first through the cylinder containing half-spent charcoal, and thereupon through the cylinder containing fresh charcoal, as and for the purpose shown and set forth.

2. A false bottom or top for a filtering or rectifying apparatus, having an annular groove in its edge, in combination with a blanket stretched over the same, and having its edges doubled upward, and a ring drawn around the outer portions of the blanket, inside its doubled-up edges, and fitting into the groove in the edge of the false bottom or top, as and for the purpose shown and set forth.

3. The combination of a filtering or rectifying cylinder, a false bottom and top perforated and having an annular groove around their edges, and blankets stretched over the false bottom and top, and having their edges held against the edges of the false bottom and top by rings fitting between the edges of the false bottom and top and the sides of the cylinder, as and for the purpose shown and set forth.

4. The combination of a rectifying-cylinder

and outlet-pipe having its upper opening at the top of the cylinder and passing down along the inside of the same, a perforated false bottom and top having annular grooves in their edges, and the false top having a half-round notch in its edge fitting around the outlet-pipe, and blankets stretched over the false bottom and top, and having their edges held against the edges of the false bottom and top by rings fitting in the grooves and doubled back, forming a packing between the edges of the false bottom and top and the sides of the cylinder, as and for the purpose shown and set forth.

5. An apparatus for rectifying spirits, consisting of a reservoir for the spirits to be rectified, a conveying-pipe having a cock at its upper end near the reservoir, two rectifying-cylinders having inlet and outlet pipes, a water-pipe, a set of horizontal inlet-pipes having cocks, as described, a set of horizontal outlet-pipes having cocks, as described, a vertical pipe connecting the upper horizontal outlet-pipe with the lower horizontal inlet-pipe, pipes conveying the rectified and diluted spirits to their appropriate reservoirs, and reservoirs for the reception of the rectified and diluted spirits, all constructed, combined, and arranged as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

JOHN HENRY THIERMAN.

Witnesses:

GEORGE WILLIAM HOELING,  
FRANCIS XAVIER GEBRE.